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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,146	01/14/2002	Sung Gue Lee	0630-1402P	6825

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EXAMINER

NGUYEN, DONGHAI D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 10/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/043,146

Applicant(s)

LEE ET AL.

Examiner

Donghai D. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-33, 51-53 and 55-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-33, 51-53 and 55-58 is/are rejected.
- 7) ☒ Claim(s) 28-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The proposed reply filed on June 30, 2004 has been entered as record.

Note that: claim 54 is canceled not claim 53 as recited in the remark.

Claim Objections

2. Claim 28 is objected to because of the following informalities: the word "wile" (claim 28, line 9) should be --while--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 28-33, 51-53 and 55-58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase " filling a ... a hole" (claim 28, lines 3-6) is vague and indefinite since it is uncertain that the solder resist of insulating resin is filled the hole or not.

The phrases "the via holes" and "the through holes (claim 51, lines 6-7) lack antecedent basis.

The phrase "and/or" in claim 51, 52 and 55 are vague and indefinite since it is uncertain which probabilities of the step of the claimed invention are carried out and the result after performing the claimed invention is uncertain (for example: in claim 51, one can carry out the

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claimed invention: plugging the solder resist into the via holes by moving the squeegee under the condition of being abutted directly on the upper surface of the through holes)

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 28-29, 33, 51-53 and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Miura et al.

Regarding claims 28-29, 51, and 53, Miura et al disclose a hole plugging method for plugging holes in a printed circuit board, comprising: filling a solder resist (7-0) in a spaces between surface side circuit pattern (4) by moving a squeegee (8/9) under the condition of being abutted on an upper surface of the circuit pattern on the surface of a printed circuit board and form in the board and the hole; and plugging the solder resist into via holes and through holes by moving the squeegee under the condition of being abutted directly on the upper surface of the via holes and the through holes (See Figs. 2-3), wherein filling the solder resist in the spaces among the surface side circuit patterns (4) to the same height as the upper surface of the circuit pattern (Fig. 1 shows solder resist in the spaces between the surface side circuit patterns are the same height as the upper surface of the circuit pattern).

Regarding claims 33 and 58, Miura et al disclose the mask 11.

Regarding claim 52, Fig. 1 discloses a via holes formed to electronically connect between first and second circuit patterns and plurality of circuit patterns (2/3) inside the board and the solder resist filled to the same height as the upper surface of the circuit patterns.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 30-32 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al in view of Bryant.

Miura et al disclose all the steps for plugging a hole in printed circuit board except the steps of moving the squeegee under the condition of being abutted on the surface of the holes a second time in the same or the opposite direction to the first plugging step; However Bryant et al teach that the steps of moving the squeegee under the condition of being abutted on the surface of the holes several times time (col. 8, line 10) in the same or the opposite direction to the first plugging step (Col. 8, lines 15-17) for effectively filling the holes (Col. 8, lines 4-7). It would have being obvious to one having ordinary skill in the art at the time the invention was made to modify Miura et al to move the squeegee second (or multiple) times as taught by Bryant et al for effectively filling the holes.

Response to Arguments

9. Applicant's arguments filed June 30, 2004 have been fully considered but they are not persuasive.

Applicants argue that Miura et al does not disclose filling the spaces among the side surface patterns to the same height as the uppers surface of the circuit patterns. Examiner respectfully disagree since fig. 1 of Miura et al clearly shows the solder resist in the spaces between the surface side circuit patterns are the same height as the upper surface of the circuit pattern (4).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN

A handwritten signature in black ink, appearing to read 'PETER VO', with a long horizontal line extending from the end of the signature.

**PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700**